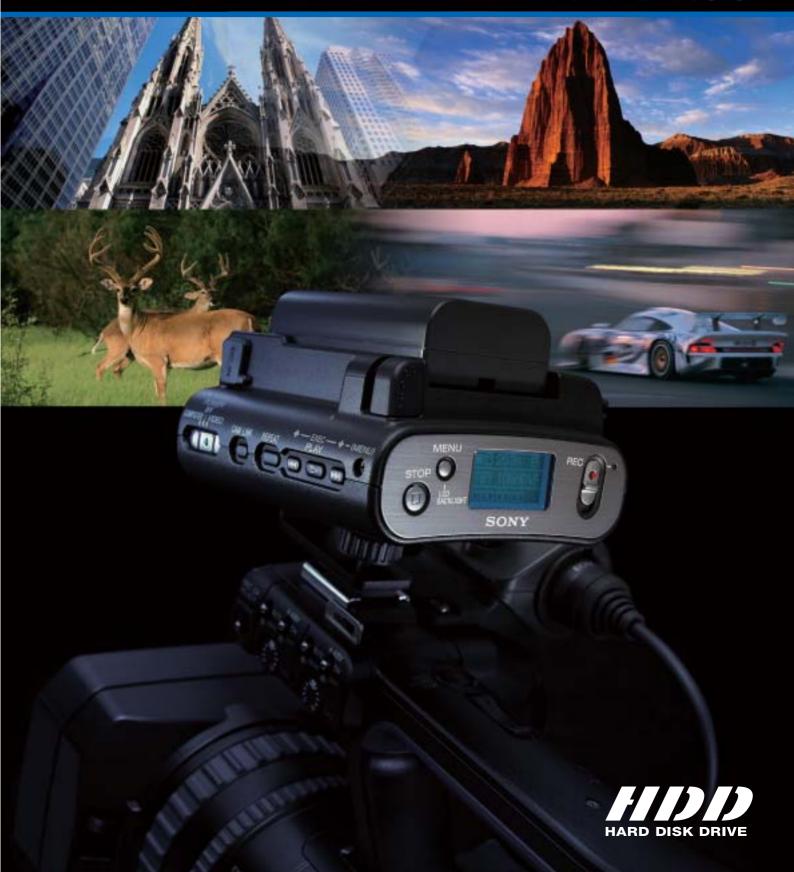# SONY®

Hard Disk Recording Unit

HVR-DR60

HDD
HARD DISK DRIVE

Revolutionizing HDV and DV Productions – Streamlining Your Workflow from Acquisition, to Editing, to Material Archiving

Speed, reliability, operability, and versatility are key concerns in any video production. The Sony HVR-DR60 Hard Disk Recording Unit offers stunning innovations for all aspects of the production process – from acquisition to editing, and onto material archiving. Extremely compact and lightweight, the HVR-DR60 can be mounted on a camcorder, thereby converting it to a 'hybrid' recording system consisting of both hard disk and tape. The benefits of integrating the HVR-DR60 with a tape-based camcorder are limitless. After a shoot, you can simply connect the unit to a compatible nonlinear editor and edit your footage instantly. The HVR-DR60 offers direct access to recordings, which makes the time-consuming digitizing process a thing of the past. And for peace of mind in the field, the HVR-DR60 not only secures your footage by acting as a backup recording device, but also extends recording time to 4.5 hours, allowing long events to be recorded continuously without any cumbersome tape exchanges. And finally, by using the HVR-DR60 as your edit source feed, you can immediately archive the footage recorded on tape. This provides a safe copy of your all-important source footage, and eliminates the time and effort usually required to dub work tapes. Combine the HVR-DR60 with your HDV™ or DVCAM™ camcorder for a true taste of workflow innovation.

Long Recording Time of 4.5 Hours

Via its simple i.LINK™*[1] connection, the HVR-DR60 Hard Disk Recording Unit can record HDV 1080i streams from a compatible HDV camcorder or DVCAM/DV streams from a compatible DVCAM camcorder. The internal 1.8-inch hard disk drive (HDD) offers a large capacity of 60 GB, which translates into a long 4.5 hours (270 minutes) recording time for both formats.

HDV 1080i streams are recorded as native HDV files (.m2t)*[2], while DVCAM/DV streams are recorded as DV-AVI (Type1)*[2] or RAW-DV*[2] files.

HDV

HDV 1080i Camcorder — **HDV 1080i stream** / **i.LINK** → M2T file

DVCAM

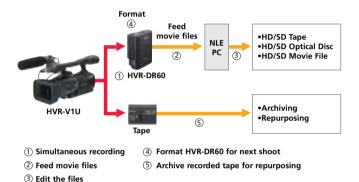**DVCAM Camcorder** — **DV stream** / **i.LINK** → DV-AVI/RAW-DV file

HDV Files Stored on the HVR-DR60 Displayed on a PC Monitor

*[1] i.LINK is a trademark of Sony used only to designate that a product contains an IEEE 1394 connector. Not all products with an i.LINK connector will necessarily communicate with each other. For information on compatibility, operating conditions, and proper connection, please refer to the documentation supplied with any device with an i.LINK connector. For information on devices that include an i.LINK connection, please contact your nearest Sony office.

*[2] During playback, interruptions in video may appear between recordings. These interruptions do not occur after the recordings are copied to an i.LINK compatible nonlinear editor system via the i.LINK connection, and the recordings can be correctly edited. For information on compatible nonlinear editors, please contact your nearest Sony office or authorized dealer.

Hybrid Operation for Reliable Recording and Archiving

The HVR-DR60 offers a hybrid recording function, in which video and audio material along with its time code is recorded simultaneously to the hard disk and camcorder tape, limiting the possibility that important shots could get lost or accidentally deleted. This hybrid function also facilitates instant archiving of source footage – which in many cases does not allow for retakes. After a shoot, operators can immediately archive the source tape and use the HVR-DR60 material as work footage. This saves the time and effort required to copy the source footage to a separate high-capacity medium.

① **Simultaneous recording**   ④ **Format HVR-DR60 for next shoot**
② **Feed movie files**   ⑤ **Archive recorded tape for repurposing**
③ **Edit the files**

Direct File Access from a Computer

When connected to a computer via an i.LINK connection, the HVR-DR60 is recognized by the computer as a standard external drive, and its recorded footage can be accessed directly like any normal video file. This saves the time previously required for digitizing material from the tape to the computer. Furthermore, video files stored on the HVR-DR60 can be transferred to a computer running compatible nonlinear editing software at a high speed of approximately 80 Mb/s (around three times faster than real time), which drastically reduces the time needed to copy source material to the editor's local drive. These features allow operators to focus on more creative and productive editing tasks.

Versatile Recording Modes

The HVR-DR60 can be used with HDV and DVCAM camcorders that are equipped with an i.LINK connector. Three recording modes can be selected to support various camcorder models and operational needs.

SYNCHRO mode

When using camcorders that support external rec control, such as the HVR-V1U, HVR-Z1U, DSR-450WS, DSR-400 and DSR-250, recording to the HVR-DR60 is directly controlled by the press of the camcorder's rec start button.[3]

[3] In this mode, a rec start delay of approximately 0.5 seconds may occur after the camcorder rec start button is pressed.

FOLLOW mode

When using camcorders that do not support external rec control, such as the HVR-A1U and DSR-PD170, the FOLLOW mode can be used to start and stop recording of the HVR-DR60. In this mode, the HVR-DR60 periodically checks whether the camcorder is in rec mode or not, and follows this status.[4]

[4] In this mode, a rec start delay of up to 2 seconds may occur after the camcorder rec start button is pressed.

Independent Recording

The HVR-DR60 can disregard the rec trigger or recording status of the camcorder and allow recording to be started and stopped using it's own control buttons. This allows control of the HVR-DR60 independent of camcorder operations.[5]

[5] In HDV mode, interruptions in time code and video may appear in the recording when the camcorder rec control buttons are pressed.

Supported Camcorder Models

	SYNCHRO mode	FOLLOW mode	Independent Recording	HDV	DVCAM	DV
HVR-V1U	○*	○	○*	○	○	○
DSR-450WS	○*	○	○*	—	○	○
DSR-400	○*	○	○*	—	○	○
DSR-570WS	○*	○	○*	—	○	—
DSR-390	○*	○	○*	—	○	—
HVR-Z1U	○	○	○*	○	○	○
DSR-250	○	○	○*	—	○	○
HVR-A1U	—	○	○*	○	○	○
DSR-PD170	—	○	○*	—	○	○
DSR-PD150	—	○	○*	—	○	○
DSR-PDX10	—	○	○*	—	○	○

*Recordable without a tape

Cache Recording

The HVR-DR60 offers a cache recording function, in which up to 14 seconds of video and audio are continuously buffered in the memory. This helps prevent the loss of important scenes or events that occur 14 seconds before the rec start button is pressed[6], as that footage is automatically recorded to the hard disk.

[6] In HDV mode, approximately 0.5 seconds of the video captured before and after the camcorder rec start button is pressed may be lost.

VTR-like Controls

The HVR-DR60 is equipped with buttons that provide VTR-like control for functions such as record, play, stop, next, previous, fast forward (approximately three times normal speed), and fast rewind (approximately three times normal speed). Using these buttons, the unit can output HDV/DVCAM/DV streams with time code via the i.LINK connector.

Quick Review of Recordings

Using the control buttons of the HVR-DR60, stored footage can be instantly accessed and previewed on the LCD monitor of the connected camcorder for a quick review of recordings.

Repeat Playback

The HVR-DR60 offers a repeat playback function that allows for one desired clip or all clips to be repeated and transferred via the i.LINK connector to an i.LINK compatible device.

Additional Features When Used with the HVR-V1U HDV Camcorder

When used with the HVR-V1U camcorder, the HVR-DR60 offers additional unique convenient features.

Checking the Operational Status on the HVR-V1U

On the LCD monitor and viewfinder of the HVR-V1U, the operational status of the HVR-DR60 such as connection, recording format, battery level, remaining recording time, recording folder name, etc. can be checked. This keeps operators informed of both the camcorder and hard drive status, without taking their eyes away from what is being shot.

HVR-DR60 Status Check
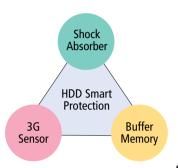
Tapeless Recording

To trigger recording of the HVR-DR60, most HDV camcorders require a tape to be loaded. However, this is not the case when using it with the HVR-V1U. The HVR-V1U sends the same rec start/stop trigger that controls its tape transport to the HVR-DR60. This feature offers operators the choice of tapeless operation or hybrid operation.

User-free Area

The HVR-DR60 has a user-free area of approximately 1 GB in the hard disk, where common data files such as still images and project files of nonlinear editing systems can be stored.

HDD Smart Protection
– Robust Recording and Shock Resistance

Three advanced technologies are used in the HVR-DR60 to provide reliable recording performance:

Shock
Absorber

HDD Smart
Protection

3G
Sensor

Buffer
Memory

1) Rubber shock absorbers hold the HDD unit in place, helping to prevent external shock from being transmitted when the HVR-DR60 chassis is subject to impact.

Shock Absorbers

2) A 3G sensor detects gravitational acceleration in three dimensions, so however the HVR-DR60 may be oriented, the sensor can detect if it has been dropped. Should this occur, power to the HDD is shut off and the recording heads are retracted from the disk platter, pausing read/write operations. This helps protect the HDD from being damaged when the unit is accidentally dropped and subject to strong impact.

3G sensor

3) A buffer memory can store approximately 14 seconds of video and audio footage. Recordings are made by first writing the data to the buffer, and then writing the buffer data to the disk platter. Consequently, if the 3G sensor temporarily interrupts disk writes, video footage is not lost.

Thanks to such advanced technologies, the HVR-DR60 should continue to record stably even when dropped from as high as 100 cm (39 3/8 inches) (based on Sony's testing).
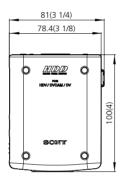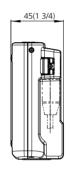
Long Operating Hours Using Common Camcorder Batteries

The HVR-DR60 uses the same infoLITHIUM™ L Series batteries as the HVR-V1U, HVR-Z1U, and DSR-PD170 camcorders. With the smallest capacity NP-F570 battery, the HVR-DR60 can run continuously up to 5.5 hours (330 min), and with the largest capacity NP-F970, this increases up to 18 hours (1080 min). Long operating hours are offered using the same camcorder batteries HDV operators already have at hand.

Compact and Lightweight

The HVR-DR60 measures just 81 x 45 x 100 mm (3 1/4 x 1 3/4 x 4 inches) in size and only about 230 g (8 oz) in weight. It can be mounted on a camcorder's cold shoe using the supplied shoe adapter, or attached using an optional VCT-1BP Bracket.

SPECIFICATIONS

Hard disk drive	
Recording capacity	60 GB*
Disk size	1.8 inches
File system	FAT32
Interface	
i.LINK	IEEE 1394a, 6-pin connector
File format	
HDV	MPEG-2-TS (.m2t)
DVCAM/DV SP	AVI-Type1 (.AVI), RAW-DV (.DV)
Built-in output device	
LCD monitor	23.02 x 11.5 mm (picture size), 128 x 64 dots
OS compatibility	
OS	Windows® 2000 Professional (Service Pack 4), Windows XP Home Edition (Service Pack 2), Windows XP Professional (Service Pack 2), Mac® OS X (v10.3)
General	
Mass	230 g (8 oz)
Power requirements	DC 7.2 V (battery pack), DC 8.4 V (AC adaptor)
Power consumption	2.7 W (in recording mode with LCD monitor on)
Operating temperature	0 to 40 °C (32 to 104 °F)
Storage temperature	–20 to +60 °C (–4 to 140 °F)
Supplied accessories	i.LINK cable (6-pin to 4-pin, 80 cm) Shoe adaptor Operating instructions

*In this specification, 1GB indicates 1 billion bytes. A portion of the recording capacity is used for data management.

DIMENSIONS

81(3 1/4)
78.4(3 1/8)
100(4)
45(1 3/4)

HDD
FOR
HDV / DVCAM / DV
SONY

Unit: mm (inches)

MK10374V1SMC06DEC